# CS7CS3 Advanced Software Engineering Group Project

# Requirements/Use Cases

# Project Name: *Please enter here*

**Group: *<Group Number>***

***<List of Group Members>***

# 1. Use Case Diagram

Please include a UML Use Case Diagram (see slides on Blackboard) for the project.

*Diagram here.*

*<From <single use case description start> to <single use case description end> contains the structure of the information that should be here for* ***each*** *use case. Copy and fill all sections for* ***EACH******USE CASE****>*

*<single use case description start>*

### Use Case Name: View map with bus stops, heatmap of bus/bus stops locations within the city, location of buses. (For emergency situations).

1. Description

*Describe the goals and responsibilities of the Use Case*

*Goals:*

1. Use Historical data for all the bus stops in Dublin.
2. Use Live data to determine current bus locations.
3. Display map which shows all the bus stops.
4. Display a heatmap that shows the current number of busses at each bus stop within the city. It will also show the probable number of buses at each location for the next few days based on the bus time-table gathered from historical data. This can change on the basis of live data for each day.

*Responsibilities:*

This use case is responsible for displaying the location of buses and bus stops so the City Manager can know the availability of buses at any given time and location to make rapid decisions during the time of emergencies.

Actors

*List the actors that are involved, and their roles in the Use Case*

1. City Managers – City Managers can select the Map or Heatmap to get the bus and bus stop locations in the desired view.

Triggers and Inputs

*List and describe the triggers that start this use case executing, and the subsequent inputs*

Triggers:

1. User logs in to the application.
2. User selects the ‘Bus’ dashboard to view the Map and Heatmap inside it.

Inputs:

1. Users can select the time period in the Heatmap to know the count of buses at any Bus Stop.

2. Flow of Events

| Basic Flow | | | |
| --- | --- | --- | --- |
| User | | System | |
| 1 | User selects the ‘Bus’ dashboard view in the application. |  |  |
|  |  | 2 | The system retrieves the historic and most-recent Bus data from the local database. |
|  |  | 3 | Map of Dublin city is displayed, with the Bus stops overlaid. Heatmap displayed on the side with each bus stop and bus detail. |
| 4 | User selects a time range. |  |  |
|  |  | 5 | Heatmap is updated with bus stop location and count of buses at that period of time. |

3. Special Requirements

*Here is where you indicate if the use case has any special requirements or expectations as to the existence of other systems*

This data requires the existence of historical and live Bus and Bus Stop data sources.

4. Preconditions

*Describe what must have occurred previously for this use case to execute*

Users must have logged in to the system, and have sufficient privileges to view the Bus locations along with the Bus Stops.

Live data must have been pushed to the local data buffer.

5. Postconditions

*Describe the state of the system, or what should be seen to have been achieved, when this use case has completed its processing.*

Once this use case has been completed, the Bus and Bus Stop locations will have rendered based on:

1. the most recent live data of the bus,
2. historic data of the bus stops and
3. the time period selected by the user.

*<single use case description end>*

### Use Case Name: Display maintenance events for each of the 3 transport types.

1. Description

*Describe the goals and responsibilities of the Use Case*

*Goals:*

1. Use live data to display maintenance for Bikes, Luas and Buses.

*Responsibilities:*

This use case is responsible for showing maintenance details for each of the three modes of transport. These details include the location, vehicle information and time of maintenance.

Actors

*List the actors that are involved, and their roles in the Use Case*

1. City Managers – When selecting the ‘Events’ view, the Events Maintenance will be rendered.

Triggers and Inputs

*List and describe the triggers that start this use case executing, and the subsequent inputs*

Triggers:

1. User logs in to the application.
2. User selects the ‘Events’ dashboard to view the maintenance details of the three modes of transport.

Inputs:

1. Users can select which mode of transport they wish to see maintenance details of.

2. Flow of Events

| Basic Flow | | | |
| --- | --- | --- | --- |
| User | | System | |
| 1 | User selects the ‘Events’ dashboard view in the application. |  |  |
|  |  | 2 | The system retrieves the most-recent Maintenance data from the local database for each of the discussed transport types. |
|  |  | 3 | A tabular display will occur for each transport’s maintenance detail. |
| 4 | User selects the mode of transport |  |  |
|  |  | 5 | Table is updated to show only the transport, user wants to see. |

3. Special Requirements

*Here is where you indicate if the use case has any special requirements or expectations as to the existence of other systems*

This data requires the existence of live Transport Maintenance sources.

4. Preconditions

*Describe what must be have occurred previously for this use case to execute*

Users must have logged into the system, and have sufficient privileges to view the Events and Maintenance details.

Live data must have been pushed to the local data buffer.

5. Postconditions

*Describe the state of the system, or what should be seen to have been achieved, when this use case has completed its processing.*

Once this use case has been completed, the details of Maintenance of all the specified modes has been rendered based on:

1. the most recent data and
2. the type of transport.

*<single use case description end>*